DEPARTMENT OF DEFENSE

BROAD AGENCY ANNOUNCEMENT

W911NF-05-R-0010

CHEMICAL AND BIOLOGICAL DEFENSE INITIATIVE FUND

August 2005

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1. INTRODUCTION

This Broad Agency Announcement (BAA) is issued by The Army Research Office on behalf of the Joint Science and Technology Office for Chemical and Biological Defense (JSTO-CBD) under provisions of the Competition in Contracting Act of 1984 (Public Law 98-369), as implemented in the Federal Acquisition Regulations (FAR). General information on the JSTO-CBD and the CBDP can be obtained from the following websites,: http://www.dtra.mil/Toolbox/cbd.cfm and http://www.acq.osd.mil/cp/ respectively.

The Department of Defense Fiscal Year 2005 Chemical and Biological Defense Initiative Fund (CBDIF) funds chemical and biological defense science and technology projects across a wide-range of military operations. Physical Science & Technology (S&T) capability areas include chemical and biological detection, individual and collective protection, decontamination, and modeling and simulation/battlespace management. Medical S&T capability areas include pre-treatments, therapeutics, and diagnostics. Proposed projects submitted in response to this BAA will advance the state-of-the-art technology in these areas. The scope of these efforts and the priorities assigned to specific projects are influenced by changes in military and civilian CBD science and technology, operational requirements, military threat assessments, defense core capability gaps, and national defense strategies.

Approximately $20 million is available for FY05 Chemical and Biological Defense Initiative Fund projects; thus, funding for participation in the CBDIF program is highly competitive and the cost of proposed technologies should be considered. It is the intent to issue contracts in response to proposals that meet or exceed all technical and programmatic evaluation criteria and that request funding in the range of $1M - $2M. The final number of projects and funds allocated will be determined after all proposals are received and evaluated. Multiple awards, on the order of 10-15, are anticipated. Contract Period of Performance is expected to be 24 months or less.

2. TECHNOLOGY AREAS OF INTEREST

The DoD is soliciting proposals in the following areas of Chemical and Biological Defense. Attachment A is provided to clarify acronyms used in this solicitation.

2.1 Detection – Chemical & Biological

The CBD Detection Capability Area requests proposals in the areas of applied research and advanced technology development for point detection.

Specifically, a need exists for the following chemical and biological detection capabilities: algorithm development, solid state based photodetectors, microfluidic

sample pre-processing, high throughput identification of BWA and improvements to Raman detection of liquid and solid chemicals.

2.1.1.1 Broad Spectrum Chemical Detection Technology.

The Joint Program Manager for Contamination Avoidance seeks support in advanced development for chemical agent detection and identification. Develop a broad-spectrum chemical detection and identification technology that is capable of automatically detecting and identifying toxic industrial chemicals, chemical warfare and non traditional agents, including Schedule 1, 2 and 3 chemicals and precursors, especially low vapor pressure hazardous chemical agents. Desired technologies are not agent specific, but provide for broad detection and identification capability on a single detection platform. The system maybe multiple technologies must be capable of detecting/identifying the analytes in all physical states (liquid, solid, and vapor) within a mixture of at least 20 components at sensitivity levels as cited in the Joint Chemical Agent Detector (JCAD) performance specification, the equivalent of 10% LD50 for documented analytes not in the JCAD performance spec, 100 parts per billion vapor for undocumented analytes, and sub-microgram quantities for undocumented liquid/solid analytes. Solutions should be capable of network connectivity to existing and projected battlefield communication architectures and modular in design to afford flexibility for use in one-man or wheeled/tracked platform applications. The overall system should have the capability to operate for at least 12 hours with internal batteries in the man-portable configuration, system cost less than $75,000 military hardened and lifecycle cost less than $7,500 per year.

2.1.1.2 Generic Biosensor Development

The Joint Program Manager (JPM) for Biological Defense seeks development of network-capable biosensors (technology may be aerosol particle counters, fluorescence microscopy, mass spectroscopy, immunological assays, etc) to act as a trigger and/or a stand alone detection technology, or complement existing fielded detection systems, by enabling environmental detection of Biological Warfare Agents of interest. The target for improvement is reduction in both resource and logistical burdens; improved sensitivity; improved confidence of results.

2.1.1.3 Point Detector Performance Models and Sensitivity Enhancement

The Joint Program Manager (JPM) Nuclear, Chemical, Biological (NBC) Contamination Avoidance is seeking support in the development of a generic physics-based model(s) for expected detector performance in varying environmental conditions. The model(s) should consider parameters vital to the process from end-to-end (ie, sample transport, sample processing, detection cell(s), detection technologi(es), operating parameters, detection algorithm(s), etc). The generic model should include input parameters for the

detection technologi(es) (IMS, SAW, electrochemistry, resistivity, etc.) The JPM is further seeking support in the development of technology to preconcentrate a vapor sample and provide it to generic detectors in order to increase sensitivity, while at the same time maintaining or improving selectivity. The hardware for the preconcentrator should be no more than 15 cubic inches, weigh no more than 0.5 lbs, operate on AC/DC power, with power consumption less than 10 W and maximum current draw no more than 2 A. It is desired that the preconcentrator achieve at least a 10-fold increase in concentration presented to the generic detector with a five-minute cycle, and a 100-fold increase in concentration with a 30-minute cycle. The preconcentrator should provide at least a 2L/min sample stream to the generic detector during the purge portion of the cycle.

2.1.1 Algorithm Development

Seeking algorithm development for imaging based systems that would decrease the false alarm rate, suppress background interference, allow spectral acquisition and detection while in motion, and characterized by reduced computational requirements. Objective is for processing to be accomplished using current single processor desktop PC, Intel Pentium™ 4 (or equivalent) level.

2.1.2 Solid State Based Photodetectors

Develop solid-state detectors to replace Photo Multiplier Tubes (PMT) currently available for use in fieldable systems. The target for improvement is reduction in cost (at production) by a factor of 10 while maintaining quantum efficiency and field survivability in comparison to commercial-off-the-shelf PMTs.

2.1.3 Microfluidic Sample Preprocessing

Develop a microfluidic sample pre-processing system to purify BWAs of interest. Sample preprocessing is needed for dry aerosol filters, filters suspended in phosphate-buffered saline (PBS), surface swipes, water filtrates and additional matrices as required. Sample preprocessing will promote isolation of BWAs of interest from background contaminants and deliver separated product to a detector (e.g. laboratory system utilizing nucleic acid or protein based identification). System requirements shall include: reduced logistics burden; simplified ease of use and minimal training for effective and compliant use; modular single use application; disposable; handheld size; no standard laboratory robotics; no human intervention for routine sample preparation; incorporation of MEMS devices requires proof-of-concept for acceptance.

2.1.4 High Throughput Identification of BWA – Point Detection

Improvements are sought to integrate high throughput wet chemistry based-identification of Biological Weapons Agents (BWA) at reduced capital equipment and logistics cost. Need is to allow fast laboratory based screening of large numbers of samples from aerosol collectors and surface swipe samples. The target is a system capable of

processing 700-1000 samples per day to detect and identify multiple BWAs; have the ability to support a 25% surge capacity with an end-to-end analytical time less than 8-hours; require staffing to support 7-day/week sustained operations utilizing less than a total of 12 personnel; instrumentation to occupy less than 25 cubic feet and having a unit price of approximately $200,000.

2.1.5 Improvements to Raman Detection of Liquid and Solid Chemicals

Raman spectroscopic techniques have been shown to be effective in the identification of chemicals in the liquid and solid forms. Improvements are sought to Raman-based detectors for use in the identification of toxic industrial chemicals and chemical warfare agents that are found in containers and as unknowns on various surfaces (i.e. tables, floors, equipment, etc.) both in liquid and solid forms. The system should have a minimum database (1000 materials) and be readily expandable for new materials; the ability to identify neat materials as well as mixtures; operational battery life greater than five hours using commercially available lithium batteries; weigh less than 10 lbs; human factor engineered to allow the sensor to be handheld in place for up to 2 minutes (sufficient time to collect Raman signature); ability for the user to archive, store, and download results in commercial standard formats, compliant with MIL-STD-810F; and system cost less than $40,000 in low quantities (less than 10).

2.2 Protection – Collective and Individual

The CBD Protection Capability Area requests applied research proposals in the areas of collective and individual protection. Specifically, a need exists for the following protection capabilities: air purification, shelters, respiratory protection, and percutaneous protection that are revolutionary, are collaborative or complimentary, and leverage other efforts.

2.2.1 Air Purification

Provide air purification technologies that will provide enhanced protection against aerosols/particulates and having significant advantages over HEPA filters. Approaches shall either remove or destroy aerosol/particulate threats from air using regenerable filters or filterless technologies.

2.2.2 Shelters

Provide permanent or semi-permanent, bare base (austere conditions) collective protection shelters or shelter systems that can provide and maintain a toxic free area. Technologies that provide “full spectrum” protection against CBRNE are desirable.

- Shelter concepts using solid free-form fabrication or easily transported and erected “molds,” geopolymers and widely available indigenous materials.
- Technology that allows easy assembly of shelters from a minimal set of flexible, semi-rigid or rigid components e.g., frame, panel, window and door components. Final structure can be further “hardened” by use of exterior and interior coatings.

2.2.3 Respiratory Protection

Provide air purification technologies that are not sorbent based, but that are efficient enough and small enough for application in protective masks. Ideally, the technology will completely replace the current filter now employed in CB protective masks.

2.2.4 Percutaneous Protection

Provide a smart/reactive protective barrier that provides high moisture vapor transport until a threat is sensed; and then changes its characteristics to become impermeable to that threat. In addition, the percutaneous protection should strive to reduce thermal stress and associated operational burden by incorporating the smart/reactive technology into existing tactical clothing ensembles.

2.3 Decontamination Technologies

The CBD Decontamination Capability Area requests applied research proposals in the areas of tactical decontamination in addition to decontaminants applicable for use at installations, in buildings and shelters, and to be applied directly to associated equipment. For tactical decontamination operations we desire new solution-based decontaminants that are effective in performing operational and thorough decontamination of military vehicles, airframes and terrain. For installation and force protection we desire decontaminants that may be used for installations, buildings, shelter, logistic nodes as well as for the associated equipment. A number of technological approaches are being examined; however, additional efforts in specific areas are desirable. Specifically, a need exists for the following decontamination capabilities:

2.3.1 Enzyme Based Decontamination Systems

The development of a broad-spectrum chemical and biological agent decontamination solution for use in both tactical and installation decontamination. While hydrolytic approaches have been widely investigated, they suffer from limited applicability, working effectively best on G-agents due to their specificity. In order to achieve broader specificity, other classes of enzymes are required in order to achieve efficacy on V-class agents, H-class agents and biological warfare agents. Enzyme systems of interest include enzymes that can produce oxidative reactants, perform dehydrohalogenation reactions or produce reactive chemical species from non-hazardous materials. Ultimately, a formulation consisting of a variety of enzymes will be desired.

2.3.2 Chem/Bio Contaminated Remains Pouch Development

The development of an aircraft transportable pouch for the safe containment, transport and temporary storage of human remains contaminated or suspected of being contaminated with chemical agents, toxic industrial chemicals and/or materials, and/or biological agents. While a variety of light- and heavyweight bodybags exist, the primary materials of construction (PE and PVC) do not offer the expanded range of chemical

barrier necessary to resist the broad range of target hazards such as those included on the ITF-25. the NATO International Task Force ITF-25 is a list of selected chemicals and includes TICs and TIMs. A description of ITF-25 can be found at http://www.who.int/csr/delibepidemics/en/annex1.pdf and at other public domain web sites. Additionally, current closures do not afford adequate liquid and vapor protection necessary to contain contaminated remains nor are they designed to contain hazardous vapors emitted from the remains under hypobaric conditions such as would occur during aircraft transport. While static high chemical barriers can be adapted for use in a remains pouch it is anticipated that the multi-functional threat analysis combined with the tactical and civilian use protocols will require incorporation of active chemical resistance such as that afforded by the use of reactive nanoparticles.

2.3.3 Non-Stick Encapsulation Coatings for Decontamination of Chemical and Biological Warfare Agents

The offeror shall propose, develop and test four (4) new types of peelable non-stick encapsulation coating formulations that can be applied to surfaces that have been contaminated with chemical or biological warfare agents, allowed to cure, and then peeled off to reveal a clean, fully decontaminated surface. The offeror shall document in the proposal why the new decontamination systems are expected to be superior to existing peelable coating systems and address why they are expected to meet the following performance criteria: Suitable for application by painting or spraying; Coating is a stable, self-contained system; Decontamination process compatible with MIL-STD paints and coatings and with aluminum, copper, and steel surfaces; Treatment reduces effective level of agent on surface by at least a factor of 10^6; Process destroys sequestered CW and BW agents by a factor of 10^6; Coating cures within 1 hour after application; and, Cured coating containing agent residues is inert and non-hazardous. The offeror shall document in the proposal how system testing will be performed. Testing must demonstrate that the formulation is effective against H, GD, and VX agents, and against three (3) types of biological warfare agent simulants (Gram positive spore forming bacteria, Gram negative bacteria, and virus).

2.3.4 Modifications for Decontamination Solutions in Extreme Weather Conditions

The Joint Program Manager for Decontamination requests Advanced Development support in the testing and modification of decontamination solutions. With the elimination of DS2 from the DoD inventory, current decontaminants do not possess the solvent properties required to operate and decontaminant Chemical and Biological warfare agents in extreme temperatures (hot & cold). Decontaminants have a reduced reaction rate at temperatures below 50°F, and being aqueous-based, freeze at temperatures below 32°F. Also, in extreme hot climates the current decontaminants will begin to evaporate prior to the 30-minute contact time required to reduce the level of contamination to acceptable levels, thus requiring multiple applications (re-wetting) of the surfaces being decontaminated to complete the decontamination operations.

The offeror shall propose decontamination formulations effective from basic cold (-25°F/-32°C) to hot (120° F/49°C) climatic conditions, and if required, propose modifications to application procedures to permit the utilization of the decontaminant without adversely affecting the efficacy or reaction rate of the product. Evaluation shall be performed via stirred reactor at a minimum of five different temperatures including the two extremes. Kinetic data shall be produced at 10-minute intervals up to reaction completion, or 2-hours which ever comes first. The offeror shall propose a recommended stimulant for two nerve agents and one blister agent that will be approved by the Government prior to start of work.

2.4 Modeling & Simulation/Battlespace Management

The CBD Modeling & Simulation/Battlespace Management (M&S) technology area requests applied research proposals in the following areas:

2.4.1 Comprehensive Database System of Systems

Perform a feasibility analysis which provides an approach to the creation of a comprehensive database system of systems that will facilitate rapid access to CBRN agent data in a variety of potential environments, both laboratory and operational. This database system should be interactive in a network environment and suitable for the development of a variety of analytical and decision support tools. Further, the system must be available to the entire CB RDT&E community within a multilevel security framework.

2.4.2 Data Analysis Tool Development

Develop data analysis tools and methods that can be used specifically to correlate data from CB laboratory, chamber and field experiments.

2.4.3 Operational Data Analysis Tool Aiding in the Implementation of Countermeasures

Develop data analysis tools and methods that can be used specifically to correlate data collected from operational CBD systems into incident command responses. This tool should facilitate timely review of data from an array of resources (field assays, laboratories, meteorological, HUMINT, etc). This tool shall enable assignment of relative degrees of confidence to be associated with recommended solution sets in response to BW incidents using hierarchal metrics to evaluate each data point reviewed. The system must incorporate a user-friendly GUI and requiring minimal training for compliant operation. Further, the system must be available to the entire CB RDT&E community within a multilevel security framework.

2.4.4 Developmental Testing Process

Formulate an end-to-end process for applying M&S tools and methods to support the developmental testing process relevant to CBD equipment.

2.4.5 Measures of Effectiveness/Measures of Performance

Create Measures of Effectiveness and Measures of Performance for the application of modeling and simulation-based tools to the T&E process as it applies to CBD equipment.

2.4.6. Modeling of CB Commodity Items

Develop non-proprietary M&S tools and methods that can be used to model the complex interaction of CB commodity items with the hazard environment.

2.5 Medical Countermeasures

The medical chemical and biological defense research program provides candidate medical countermeasures to chemical and biological warfare threats. These countermeasures include specialized medical materiel or procedures designed to enhance protection (pre-treatments), provide rapid diagnostics, and treat illness (therapeutics) to permit a rapid return to duty. The CBD Medical Science and Technology capability areas request applied research proposals for the following medical technologies:

2.5.1 Medical Pre-treatments/*B. cereus* Evaluation

Seeking evaluation and determination of the effectiveness of existing and novel anthrax vaccines against *Bacillus cereus* G9241 in addition to other bacillus strains. Study should include immunization of animals utilizing a variety of vaccines as a means to prevent morbility and mortality resulting from the specific strain. Analysis of virulence and resulting pathogenesis following aerosol exposure/infection is also requested. Upon completion of the study, preparation of a report to summarize experimental procedures, protocols, and results is required.

2.5.2 Medical Pre-treatments/Polyclonal Antibody & Adjuvants/Immune Modulators

Development and generation of high quality human-based polyclonal antibodies and novel adjuvants/immune modulators are sought for pretreatment or post-exposure prophylaxis against BW threats.

2.5.3 Medical Therapeutics/Non-antibiotic Small Molecule Therapeutics

Development of broad spectrum non-antibiotic small molecule therapeutics that target either human host or pathogens. The salient biological properties and features of the small molecules should have some of the following profound physiologic actions in countering unanticipated diseases and disease consequences:

– Broad-spectrum non-antibiotic countermeasures for intracellular bacterial pathogens
– Effective broad-spectrum therapy for HFV's
– Identification of mechanisms for small molecules that disrupts escort proteins for RNA viruses
– Enhance innate immunity

– Mechanisms to identify and block neurotropic viruses from receptor bindings
– Perform in vitro small molecules evaluations with high throughput screening (e.g., aptamer, peptoids, anti-sense RNA, etc) that target common bacterial virulence or house-keeping genes
– Fragment-based drug discovery with emphasis on compound tethering

2.5.4 Medical Therapeutics/Drug Discovery

Development of therapeutic drug discovery using integrated systems biology/proteomics analysis of the host/pathogen relationship of biological warfare agents and their toxins. Additionally, therapies and drug discovery using metabolomics profiling of CBW agents is sought.

2.5.5 Medical Diagnostics/Sample Concentration.

Develop improved concentration technologies focusing on sample concentration prior to sample extraction. Dual application methods are required for both environmental and clinical sample matrices. The improved methodologies should be able to be performed manually in addition to being performed via an automated sample processor. The method should target bacteria, viruses and toxins in the appropriate matrix for the agent. Matrices include anticoagulated whole blood (EDTA tube), surface swabs, sputum, stool, dry filters, and buffer (e.g., phosphate-buffered saline, PBS).

2.5.6 Medical Diagnostics/Maintaining Extended Periods of Sample Integrity

Development of technologies that serve to maintain biological sample integrity/viability for bacteria, viruses and toxins, so as to extend the period (in the appropriate matrix for a given agent) initiated at sample collection until sample testing. Dual application methods are required for both environmental and clinical sample matrices. Matrices include anticoagulated whole blood (EDTA tube), surface swabs, sputum, stool, dry filters, and buffer (e.g., phosphate-buffered saline, PBS). The extended integrity time period should extend to seven days when the sample is stored at freezing temperatures (~0°C) to 50°C. The method should also allow for preserving the sample, once tested, until its delivery to a reference lab.

2.5.7 Medical Diagnostics/Integrated Diagnostics Platform – Array-based Technologies

Assay based technologies are sought for the development of an integrated diagnostics platform for nucleic acid and immune detection of bacteria, viruses, and toxins. Dual application processes and procedures are required for both environmental and clinical sample matrices.

2.5.8 Medical Diagnostics/Bioinformatics Software

Development of bioinformatics software programs to accurately interpret diagnostic-based array data for biological agents and toxins. Dual application software is required for the analysis of data collected from both environmental and clinical sample matrices.

3. GENERAL INFORMATION

3.1 Eligibility

To be eligible for contract award, an offeror must meet certain minimum standards pertaining to financial solvency/resources, prior record of performance, integrity, organization, experience, operational controls, technical skills, facilities, and equipment. See FAR 9.104. Additionally, all offerors MUST be registered in the Central Contractor Registration (CCR) database as indicated in DFARS 204.7300. The website address for CCR database is http://www.ccr.gov.

The Government encourages nonprofit organizations, educational institutions, small businesses, SBD, and HBCU/MIs, as well as large businesses to submit proposals for consideration.

3.2 HBCU/MI and Small Business Participation

Historically Black Colleges and Universities (HBCU), Minority Institutions (MI), Small and Disadvantaged Businesses (SDB), women owned businesses, and Historically Underutilized Business (HUB) zone enterprises are highly encouraged to submit proposals, and to join others in submitting proposals; however, no portion of the BAA will be set aside for these special entities because of the impracticality of reserving discreet or severable areas of research and development in any specific requirement area.

3.3 Instructions and Points of Contact

This BAA package may be downloaded electronically in its entirety from the ARO and FedBizOpps websites: http://www.aro.army.mil and http://www.fedbizopps.gov/.

Interested parties are encouraged to submit comments or questions via electronic mail to the following e-mail address: QA@arl.army.mil. Comments or questions submitted should be concise and reference the relevant part and paragraph of the BAA. Only questions received by 5 September 2005 shall be addressed. All questions and responses will be posted on a Q&A section of the ARO web site at http://www.aro.army.mil under "For the Researcher" as they become available or not later than 15 September 2005.

3.4 Submission Handling/Rights in Technical Data and Computer Software/Patent Rights – General Compliance

3.4.1 Procurement Integrity.

The Government intends to comply with FAR 3.104 in its treatment if information submitted in response to this BAA solicitation and marked with the individual or company's legend.

3.4.2. Rights in Technical Data and Computer Software.
Rights in technical data, computer software and software documentation provided in the proposal will be treated IAW the DFARS 252.227-7016, entitled "Rights in Bid and Proposal Information." Rights in technical data, computer software and software documentation in the resultant contract shall be in accordance with DFARS 252.227-7013 (regarding technical data) and DFARS 252.227-7014 (regarding computer software and software documentation). Both clauses (252.227-7013-7014) shall be included in any non-commercial contract exceeding the simplified acquisition threshold. Other clauses to be included in the contract are: DFARS 252.227-7017, DFARS 252.227-7019, Validation of Asserted Restriction – Computer Software; DFARS 252.227-7025, Limitations on the Use or Disclosure of Government Furnished Information marked with Restrictive Legends; DFARS 252.227-7027, Deferred Ordering of Technical Data or Computer Software; DFARS 252.227-7030, Technical Data Withholding of Payment; DFARS 252.227-7036, Declaration of Technical Data Conformity; and DFARS 252.227-7037, Validation of Restrictive Markings on Technical Data.

3.4.3 Biological Defense Research Program Requirements
Applicable to the Biological Defense Research Program funded awards. For those institutions where Principal Investigators are supported by the USAMRMC and are conducting research with Bio-safety Levels 3 and 4 material, a Facility Safety Plan must be prepared in accordance with 32 Code of Federal Regulations (CFR) 626.18.
See URL: www.access.gpo.gov/nara/cfr/waisidx_99/32cfr626_99.html for a copy of 32 CFR 626.18, Biological Defense Safety Program.

3.5 Standards of Conduct, Ethical Considerations

3.5.1 Conflicts of Interest Certain post-employment restrictions on former federal officers and employees may exist, including special Government employees (Section 207 of Title 18, United States Code (USC)). If a prospective offeror believes that a conflict of interest does exist, the situation should be raised to the issuing office's contracts representative before time and effort is expended in preparing a proposal.

3.5.2. Use of Human Subjects and Laboratory Animals
Awardees under this BAA must comply with applicable provisions of national policies concerning research involving the use of live organisms.

3.5.3. Human Subjects
For human subjects, the provisions include the Common Federal Policy for the Protection of Human Subjects codified by the Department of Health and Human Services at 45 CFR part 46 and implemented by the Department of Defense at 32 CFR part 219.

3.5.4. Animals
For animals, the provisions include rules on animal acquisition, transport, care, handling, and use in: (i) 9 CFR parts 1-4, Department of Agriculture rules that implement the Laboratory Animal Welfare Action of 1966 (U.S.C. 2131-2156); and (ii) the "Guide for

the Care and Use of Laboratory Animals," National Institutes of Health Publication No. 86-23.

4. PROPOSAL PREPARATION

This section provides information needed by the individual preparing the proposal for submission under this BAA.

4.1 General Guidance.

All submittals must strictly follow the instructions in this announcement and include information specified to avoid delays in evaluation or disqualification of a submittal.

4.2 Proposal Submittals.

The offeror shall ensure that the candidate proposal meets the needs of the requirement including technical feasibility, cost, and other evaluation criteria as identified in this BAA.

Offerors shall respond to this BAA submitting a technical proposal not to exceed 30 pages and a cost proposal.

The proposal must contain three electronic forms: (1) ARO Form 51 (Proposal Cover Page); (2) ARO Form 99 (Summary Proposal Budget); and (3) ARO Current and Pending Support (unnumbered form). See Proposal Content below. These forms may be accessed electronically at https://www.aro.army.mil under "For the Researcher". The fillable PDF forms may be saved to a working directory on your computer and opened and filled in using the Adobe Acrobat software application. **The fillable Proposal Cover Page (ARO Form 51) should be printed, signed, and scanned into a PDF file with the proposal.**

The technical proposal and cost proposal must be received electronically to the following e-mail address: BAA@aro.army.mil no later than 1600 hours (4:00 PM) local time on 11 October 2005**.**

Budget is an important consideration in both peer and programmatic review, and applicants are cautioned to use discretion in budget requests. Budgets will also be reviewed during award negotiations. Complete justifications must be provided for expenses in all categories. The ARO Form 99, Summary Budget Form, shall be used for budget submission which can be located at https://www.aro.army.mil under "For the Researcher." Each item in the budget should be clearly justified on an attached Justification Page.

4.3 Restrictive Marking on Proposals.

The proposal submitted in response to this solicitation may contain technical and other data that the offeror does not want disclosed to the public or used by the Government for any purpose other than proposal evaluation. Information contained in unsuccessful proposals will remain the property of the offeror except for that evidenced in the Proposal

Cover Page and Project Summary. The Government may, however, retain copies of all proposals. Public release of information in any proposal submitted will be subject to existing statutory and regulatory requirements.

If proprietary information which constitutes a trade secret, proprietary commercial or financial information, confidential personal information, or data affecting the national security, is provided by a offeror in a proposal, it will be treated in confidence, to the extent permitted by law, provided that the following legend appears and is completed on the front of the proposal:

> "For any purpose other than to evaluate the proposal, this data shall not be disclosed outside the Government and shall not be duplicated, used, or disclosed in whole or in part, provided that if an award is made to the offeror as a result of or in connection with the submission of this data, the Government shall have the right to duplicate, use or disclose the data to the extent provided in the agreement. This restriction does not limit the Government's right to use information contained in the data if it is obtained from another source without restriction. The data subject to this restriction is contained in page(s) _____ of this proposal."

Any other legend may be unacceptable to the Government and may constitute grounds for removing the proposal from further consideration without assuming any liability for inadvertent disclosure. The Government will limit dissemination of properly marked information to within official channels. In addition, the pages indicated as restricted must be marked with the following legend:

> "Use or disclosure of the proposal data on lines specifically identified by asterisk (*) are subject to the restriction on the front page of this proposal."

The Government assumes no liability for disclosure or use of unmarked data and may use or disclose such data for any purpose.

In the event that properly marked data contained in a proposal submitted in response to this solicitation is requested pursuant to the Freedom of Information Act, 5 USC 552, the offeror will be advised of such request and, prior to such release of information, will be requested to expeditiously submit to ARO a detailed listing of all information in the proposal which the offeror believes to be exempt from disclosure under the Act. Such action and cooperation on the part of the offeror will ensure that any information released by ARO pursuant to the Act is properly determined.

4.4 Technical Proposal

4.4.1 Content.

The proposal cover page does not count against the 30-page limit.

All paragraphs containing proprietary information should be marked.

The proposal shall specify the technology area/sub-area of interest (cite BAA paragraph number and title; see Section 2). Describe the problem/threat being addressed in the BAA requirement.

The technical content must include an abstract (executive summary), a technical approach, a program plan including a Statement of Work with description of proposed tasks and task phasing, facilities and equipment descriptions, list of applicable documentation and reports, and a management summary plan.

Include definition of anticipated risks, planned mitigation efforts, work to be performed by the offeror and by other organizations. Include clear descriptions of phases and decision points.

Provide a description of the offeror's relevant prior work conducted in the proposed research area.

Provide a suggested concept of operations and potential users for the technology being proposed.

Define and list the planned contract deliverables.
The names of other DoD, federal, state, or local agencies or other parties receiving the proposal and/or funding the proposed effort must be disclosed. If none, so state.

Include a description of similar work performed, including what agency (DoD, federal, state, local government, or other party) funded the effort. List all similar proposals, funded or unfunded, submitted to government agencies, past or present. Include grant/contract number, total amount funded, and sponsoring organization (if applicable).

4.4 2 Intellectual Property: The offeror's proposed position on ownership of intellectual property shall be described. The proposal shall identify any existing intellectual property claims or intentions. The offeror shall specifically indicate if there is a patent pending (and the patent application number, if received) or a patent issued with the patent number(s). Upon request, the offeror may be required to provide access to pending patent applications.

The offeror shall include a statement on licensing or venturing plans, as applicable, if the project is successful. The offeror shall discuss barriers to commercialization, such as anticipated regulatory issues (such as environmental, safety, health, and transportation), liability issues, interoperability, financing, etc. and planned steps to address these barriers.

4.4.3 Performance Schedule: Provide a table of tasks and sub-tasks, and the duration of performance of each, in a Gantt or other suitably formatted chart. Schedule should show planned start and stop point of each phase and subordinate tasks, estimate delivery dates, and decision points. Period of performance will be assumed to be the last completion date shown unless otherwise stated.

4.5 Technical Proposal - File Format

The technical proposal shall describe the capability/technology gap addressed, provide a detailed explanation of the proposed technology, identify deliverables, describe work to be performed, and will describe the offeror's expertise to effect the proposed solution.

The technical proposal must not be more than 30 pages (including figures, charts, tables, but excluding the cover page). All proposal pages must be formatted using single-side, single-spaced pages with font no smaller than 10 point (including figures, charts, tables), with 1-inch page margins (left/right/top/bottom). If the proposal exceeds 30 pages, only the first 30 pages will be evaluated.

The technical proposal shall be prepared in color, or black and white, in Microsoft Word 2000 or Adobe Acrobat (PDF – portable document format) electronic file format. Each document must be print-capable, without password, using text font and graphic file formats that will result in a document NOT TO EXCEED 10 MEGABYTES FILE SIZE. Graphic images inserted into each document should be in a file format (such as JPEG/GIF) that will minimize file size and support clear SGVA display and document printing (96 DPI recommended). The offeror shall ensure that the response is received on time (to account for delays in file transfer from the originator's computer server to the government computer server) and in accordance with the instructions in this BAA. Proposals received after the closing date and time will not be accepted by the Government.

4.6 . Cost Proposal - Content.

The cost information of the proposal shall contain the following:

A cost estimate that is sufficiently detailed by element of cost for meaningful evaluation. Cost estimates shall be identifiable a task-phased budgetary estimate (e.g., by tasking proposed in the technical section). Cost breakdown shall detail labor hours and associated cost by labor category (direct labor), materials, indirect costs, and other direct costs such as special test equipment or travel. Offerors shall provide exhibits as necessary to substantiate cost elements.

A cost-element breakdown shall be attached for each proposed line item and must reflect all specific requirements. Supporting breakdowns must be furnished for each cost element, consistent with the offeror's accounting system. When more than one contract line item is proposed, summary total amounts covering all line items must be furnished for each cost element. If agreement has been reached with Government representatives on the use of forward pricing rates/factors, identify the agreement. Depending on the offeror's system, breakdowns shall be provided for the following basic elements of cost, as applicable:

Materials: Provide a consolidated price summary of individual material quantities included in the various tasks, orders, or contract line items being proposed and the basis for pricing (vendor quotes, invoice prices, etc.). Include new materials,

parts, components, assemblies, and services to be produced or performed by others. For all proposed items, identify the item and show the source, quantity and price.

Established Catalog or Market Prices/Prices Set By Law or Regulation: When an exemption from the requirement to submit cost or pricing data is claimed, whether the item was produced by others or by the offeror, provide justification for the exemption.

Noncompetitive Methods: For those acquisitions (e.g. subcontract, purchase orders, material orders) over $550,000 priced on a competitive basis, also provide data showing the basis for establishing source and reasonableness of price. For standard commercial items fabricated by the offeror that are generally stocked in inventory, provide a separate cost breakdown if price is based on cost. For inter-organizational transfers priced at cost, provide a separate breakdown of cost by elements.

Direct Labor: Provide a list of participants, not necessarily by name, showing a time phased (e.g. monthly, quarterly) breakdown of labor hours, rates, and cost by appropriate category, and furnish basis for estimates.

Indirect Costs: Indicate how offeror has computed and applied offeror's indirect costs. Indicate the rates used and provide an appropriate explanation.

Other Costs: List all other costs not otherwise included in the categories described above (e.g. special tooling, travel, computer and consultant services, preservation, packaging and packing, spoilage and rework) and provide the basis for pricing.

Royalties: If more than $250, provide the following information on a separate page for each separate royalty or license fee:

- Name and address of licensor
- Date and license agreement
- Patent numbers, patent application serial numbers, or other basis on which the royalty is payable
- Brief description (including any part or model numbers of each contract item or component on which the royalty is payable)
- Percentage or dollar rate of royalty per unit
- Unit price of contract item
- Number of units
- Total dollar amount of royalties

Note: A copy of the current license agreement and identification of applicable claims of specific patents may be specifically requested by the contracting officer. (See FAR 27.204 and 31.205.37).

Facilities Capital Cost of Money: When an offeror elects to claim facilities capital cost of money as an allowable cost, the offeror must submit Form CASB-CMF and show the calculation of the proposed amount. See FAR 31.205-10.

Fee: Include the fee, if any, proposed for this effort.

5. Contractual Content.
The contractual portion of the cost proposal should contain the following:

5.1 ORCA The provision at FAR 52.204–8 requires contractors to complete representations and certifications in ORCA at website http://orca.bpn.gov/ Certifications and representations shall be completed by successful offerors prior to award. Federal Acquisition Regulation (FAR) Online Representations and Certifications Application (ORCA) is at website as stated above. Defense FAR Supplemental and contract specific certification packages will be provided to the contractor for completion prior to award.

5.2 Subcontracting.
Pursuant to Section 8(d) of the Small Business Act (15 U.S.C. 637(d)), it is the policy of the Government to enable small business and SDB concerns to be considered fairly as subcontractors performing work or rendering services as prime contractors or subcontractors under Government contracts, and to assure that prime contractors and subcontractors carry out this policy.

If the total amount of the proposal exceeds $500,000 and the offeror is not a small business, the offeror shall be prepared to submit a subcontracting plan for small business and small socially and economically disadvantaged business concerns. A mutually agreeable plan will be included in, and made a part, of the resultant contract. The contract cannot be executed unless the contracting officer determines that the plan provides the maximum practicable opportunity for small business and SDB concerns to participate in the performance of the contract. Offerors who have negotiated a comprehensive subcontracting plan (DFARS 219.702), or are not required to submit a subcontracting plan (e.g. a Small Business), are required to submit information that identifies the extent of Small Business and Historically Black College or University/Minority University (HBCU/MI) participation.

Subcontracts: Subcontract arrangements with the Government (e.g., Government laboratories) are discouraged. Include description of co-participants' capabilities and/or experience as well. State whether agreement has been reached with proposed co-participants.

5.3 Contractor Man-hour Reporting: All contract awardees are required to report all manpower, including Subcontractor manpower required for performance of the contract. Contractors will be required to fill out the information in the format required using this web site address: https://contractormanpower.army.pentagon.mil/

5.4 Certifications

All awards require certifications of compliance with national policy requirements. Statutes and government wide regulations require some certifications to be submitted at time of proposal submission rather than at the time of award. By signing and submitting a proposal with the required cover, individuals are providing the certification at 32 CFR Part 25 regarding debarment, suspension, and other responsibility matters; the certification at 32 CFR Part 25 regarding drug-free workplace requirements; the certification at 32 CFR Part 28 regarding lobbying.

The identity of any members of the organization with potential conflicts of interest (COI). Possible COI include any people with prior federal employment including employment of the principal investigator as a special Government employee (duties, agency with whom employed, dates of employment) within two years from the date of proposal submission. If none, so state.

A statement regarding possible impact, if any, of the proposal's effect on the environment. If none, so state.

5.5 Report Requirements.

The number and types of deliverable reports shall be specified in the contractual document. The reports shall be prepared and submitted IAW the procedures contained in the contract. A Final Report that summarizes the project and associated tasks is required at the conclusions of each contract, notwithstanding the fact that the research may be continued under a follow-on contract. Monthly reports documenting program and financial status are required. In addition, test plans, test and technical reports, technical data, specifications, computer programs or other data should be specified based upon the proposed efforts as appropriate.

5.6 Identification of Rights in Technical Data and Computer Software/Patent Rights.

Technical data and computer software to be delivered with less than unlimited rights should be identified as prescribed by DFARS 252.227-7017 and DFARS 252.227-7028.

6. PROPOSAL EVALUATION

The Contracting office will obtain written non-disclosure agreements from each evaluator stating proprietary information in the proposal will only be used for evaluation purposes and will not be further disclosed or utilized. Funded proposals may be subject to public release under the Freedom of Information Act; proposals that are not selected for funding will not be subject to public release.

6.1 Technical Review

It is the intent of this office to use contractor support personnel in the review, evaluation, and administration of all submittals for this BAA. All individuals in this category that will have access to any proprietary data shall certify that they will not disclose any information pertaining to this solicitation including any submittal, the identity of any submitters or any other information relative to this BAA. Submission of information in

response to this BAA constitutes permission to disclose information to certified evaluators under these conditions.

6.2 Evaluation Factors

Awards will be made based on the recommendations of a two-tiered review process consisting of (tier 1) a peer review panel for overall scientific and technical merit and (tier 2) a higher-level panel who will conduct a programmatic review for fulfilling CBD program priorities. The criteria used to evaluate and select proposals for the CBDIF program are described below. Each proposal will be evaluated on its merit and relevance to the CBDIF rather than against other proposals in the same general research area.

6.2.1 Scientific/Technical Evaluation Criteria.

Listed in order of importance)

The proposed technology will be evaluated on the following technical criteria:

Feasibility of the technical approach to accomplish the scientific and technical objectives.*

Originality and innovation of the proposed technology.*

Reasonableness of budget and realism of schedule.+

Qualifications and expertise of Principal Investigator and staff, key personnel who are critical to the achievement of the proposed objectives.+

Adequacy of resources and facilities and the offeror's capabilities related CB experience, facilities, techniques, or unique combinations thereof which are integral to achieving the proposed objectives.+

* Of equal importance

+ Of equal importance

6.2.1 Programmatic Evaluation Criteria.

The proposed technology will be evaluated on the following programmatic criteria:

(All are of equal importance)

Potential for the technology to transition to an existing or prospective acquisition program,

Provide significantly improved operational capabilities for the warfighter

Ability to fulfill a technology gap/capability need as specified on the Joint Requirements Office for Chemical Biological Radiological Nuclear Defense (JRO-CBRND) priority list. (See Attachment B.)

6.3 Notification to Offerors.

The solicitation is complete when the Government concludes technical and programmatic evaluations of all submissions and awards any contracts considered under this BAA. Following proposal review, the Government will notify the offeror (normally within 45 days of the submittal close date) when a submittal has been accepted or rejected. Notifications of rejection will likewise be e-mailed to the address provided by the offeror. If requested, a brief synopsis of the government's evaluation of the offeror's proposal will be provided via e-mail.

7. REGULATIONS AND FORMS

Copies of the Federal Acquisition Regulation (FAR) and Defense FAR Supplement referenced in this BAA may be purchased from the Superintendent of Documents, Government Printing Office, Washington, DC 20402-9325 or located at website http://farsite.hill.af.mil.

Office of Management and Budget Circulars referenced in this BAA may be obtained from:

EOP Publication Office
New Executive Office Building
725 17th Street, NW, Room 2200
Washington DC 20503
Telephone: 202-395-7332

or found at website www.whitehouse.gov/omb/index.html

Code of Federal Regulations can be found at www.access.gpo.gov/nara/cfr/index.html.

Attachment A – Acronyms and Abbreviations

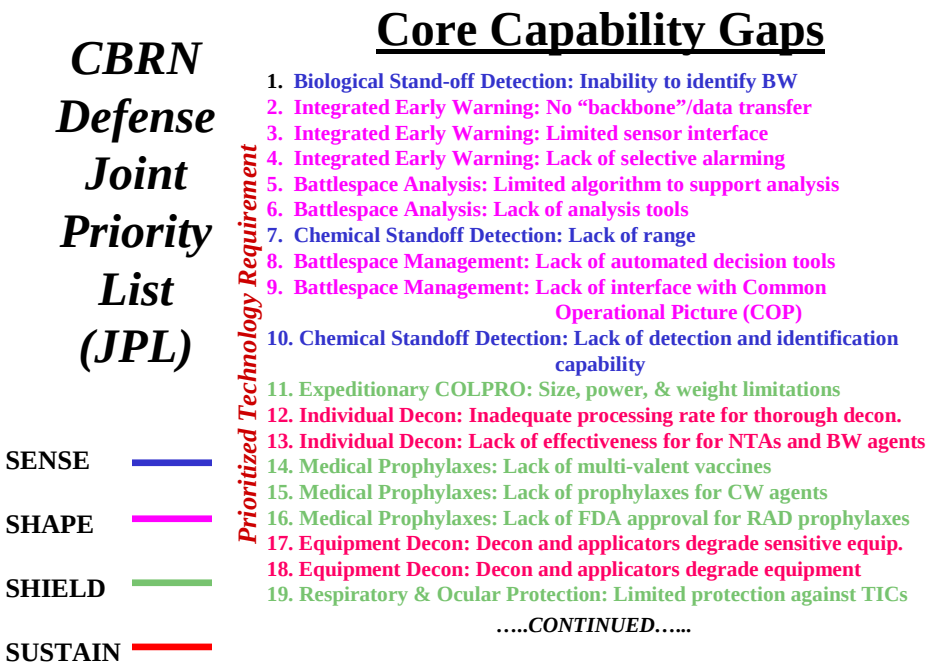
BAA – Broad Agency Announcement
BWA – Biological Weapons Agents
CAPO – Capability Area Program Officer
CB – Chemical and Biological
CBDIF – Chemical and Biological Defense Initiative Fund
CBDP – Chemical and Biological Defense Program
CBD – Chemical and Biological Defense
CBRNE – Chemical, Biological, Radiological, Nuclear, Explosives
CCR – Central Contractor Registration
CFR – Code of Federal Regulations
CO – Contracting Officer
COI – Conflict of Interest
CP – Collective Protection
CPFF – Cost Plus Fixed Fee
CW/BW – Chemical Warfare/Biological Warfare
DoD – Department of Defense
DTRA – Defense Threat Reduction Agency
DUNS - Data Universal Numbering System
FAQ – Frequently Asked Question
FAR – Federal Acquisition Regulation
FOIA – Freedom of Information Act
GFI - Government Furnished Information
GFM – Government Furnished Material
HBCU – Historically Black Colleges and Universities
HEPA - High Efficiency Particulate Air
HFV - Hemorrhagic Fever Viruses
HUB – Historically Underutilized Business
ITF – International Task Force
IAW – In accordance with
JPEO – Joint Program Executive Office
JRO – Joint Requirements Office
JSTO- Joint Science and Technology Office
M&S – Modeling & Simulation
MEMS - MicroElectroMechanical Systems
MI – Minority Institutions
MOE – Measures of Effectiveness
NAICS – North American Industry Classification System
NBC – Nuclear, Biological and Chemical
PE – Polyethylene
PMT – Photo Multiplier Tube
PVC – Polyvinyl Chloride
SBA – Small Business Administration
SDB – Small and Disadvantaged Businesses

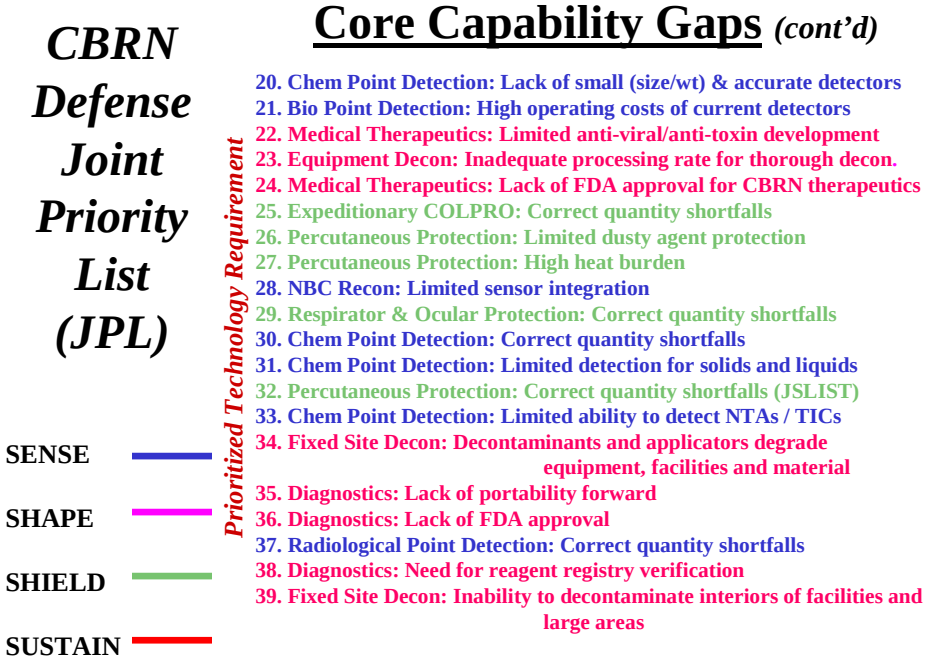
SOW – Statement of Work
TDP – Technical Data Package
TIC – Toxic Industrial Chemical
TIM – Toxic Industrial Material
TRL – Technology Readiness Level
USC – United States Code

Attachment B – Gantt Chart Example

	FY06				FY07			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Task 1: Military requirements analysis								
Advance framework developed in FY04								
Coordinate analysis with JRO								
Document results								
Task 2: Model Development								
Complex scene analysis								
Code standardized model								
Validate model through FY05 tests								
Modify noise model based on FY05 tests								
Task 3: High-speed detector development								
Characterize system delivered in FY04								
Write engineering & characterization report								
Task 4: High-resolution camera evaluation								
Characterize system								
Write engineering & characterization report								
Task 5: Experimental flight tests								
Design and plan test								
Conduct test								
Task 6: Demonstration								
Design and plan demonstration								
Conduct demonstration and final tests								
Task 7: Performance Evaluation								
Analyze/document results from FY06 tests								
Task 8: Algorithm development								
Algorithm trade study								
Algorithm development								
Algorithm development								
Real-time implementation								
Document trade study								

Attachment C – CBRN Defense Joint Priority List *





NOTE: The information provided in this Attachment is offered for reference purposes only. For the technologies being solicited via this BAA, do ***not*** include all core capability areas shown in the CBRN Defense Joint Priority List.